WHAT IS CLAIMED IS:

1. A web conveying apparatus for conveying a web while holding the web and applying tension to the web, wherein the conveying apparatus comprises a plurality of rollers with which the web contacts to be conveyed, and at least one roller of the rollers comprises a mechanism to limit deformation of the web to Y/E or less, where Y is yield strength of the web and E is Young's modulus of the web.

2. The web conveying apparatus according to claim 1, wherein the mechanism is a mechanism for controlling inclination of an axis of the roller having the mechanism.

3. The web conveying apparatus according to claim 1, comprising a meandering correction mechanism that corrects meandering of the web.

4. The web conveying apparatus according to claim 3, wherein the meandering correction mechanism comprises a displacement detection signal generator for generating displacement detection signal with laser sensor and an arc motion roller that provides the web an motion opposite to displacement of the web based on the displacement detection signal.

5. The web conveying apparatus according to claim 2, wherein the mechanism for controlling the inclination of the axis of the roller is a mechanism for controlling the inclination of the axis by moving upward or downward one end of the axis of the roller with supporting other end of the axis of the roller.

6. The web conveying apparatus according to claim 2, wherein the mechanism for controlling the inclination of the axis of the roller has an inclination detection mechanism with a non-contact sensor.

7. The web conveying apparatus according to claim 2, wherein the mechanism for controlling the inclination of the axis of the roller has a servo motion mechanism with a plurality of discrete control amounts.

8. The web conveying apparatus according to claim 2, wherein the mechanism for controlling the inclination of the axis of the roller has a servo motion mechanism with continuous control amounts.

9. The web conveying apparatus according to claim 2, wherein the mechanism for controlling the inclination of the axis of the roller has a servo

motion mechanism and a mechanism for preventing a maximum control amount due to the servo motion mechanism from exceeding yield stress of edges of the web.

10. The web conveying apparatus according to claim 1, wherein the tension applied to the web is controlled such that it is 0.49N or more for 1 cm of the web width.

11. The web conveying apparatus according to claim 2, further comprising a mechanism for maintaining difference in inclination between the axis of the roller having the mechanism for controlling the axis of the roller and axes of preceding and succeeding rollers within 1.025/1000 radian.

12. The web conveying apparatus according to claim 2, wherein the mechanism for controlling the inclination of the axis of the roller is an electrical supply roller.

13. An electrodeposition apparatus comprising a web conveying apparatus according to any one of claims 1 to 12, an electrodeposition vessel holding a electrodeposition bath in which electrodeposition is performed with the web being immersed, and an electrode

for the electrodeposition.

14. A web conveying method comprising using an apparatus for conveying a web while holding the web and applying tension to the web, wherein the conveying apparatus comprises a plurality of rollers with which the web contacts to be conveyed, and the web is conveyed while deformation of the web is limited to Y/E or less by a mechanism provided for at least one roller of the rollers, where Y is yield strength of the web and E is Young's modulus of the web.

15. The web conveying method according to claim 14, wherein inclination of an axis of the roller having the mechanism is controlled by the mechanism.

16. The web conveying method according to claim 14, wherein the web is conveyed with the web meandering being corrected by a web meandering correction mechanism.

17. The web conveying method according to claim 16, wherein the meandering correction mechanism comprises a displacement detection signal generator for generating displacement detection signal with laser sensor and an arc motion roller, and the web is conveyed with the mechanism providing the web an motion

opposite to displacement of the web by moving the arc motion roller based on the displacement detection signal.

18. The web conveying method according to claim 15, wherein the web is conveyed while the mechanism for controlling the inclination of the axis of the roller moves upward or downward one end of the axis of the roller with supporting other end of the axis of the roller.

19. The web conveying method according to claim 15, wherein the mechanism for controlling the inclination of the axis of the roller has an inclination detection mechanism with a non-contact sensor, and the web is conveyed with the detection mechanism monitoring the inclination of the axis.

20. The web conveying method according to claim 15, wherein the mechanism for controlling the inclination of the axis of the roller has a servo motion mechanism and a mechanism for preventing a maximum control amount due to the servo motion mechanism from exceeding yield stress of edges of the web, and the web is conveyed with these mechanisms such that the stress of the web edges do not exceed the yield stress.

21. The web conveying method according to claim 15, wherein the web is conveyed while the tension applied to the web is controlled such that it is 0.49N or more for 1 cm of the web width.

22. The web conveying apparatus according to claim 15, wherein the web is conveyed while difference in inclination between the axis of the roller having the mechanism for controlling the axis of the roller and axes of preceding and succeeding rollers is maintained within 1.025/1000 radian.

23. The web conveying method according to claim 15, wherein the web is conveyed while the mechanism for controlling the inclination of the axis of the roller controls inclination of an axis of an electrical supply roller.

24. An electrodeposition method comprising conveying a web by a web conveying method according to any one of claims 14 to 23 such that the web passes through an electrodeposition bath, and depositing a film on the web by electrodeposition.

25. A web conveying apparatus comprising:

a wind-up roller for providing driving force to convey a web handled in coil form at a predetermined

speed and winding up a processed web with alignment of edges of the web;

a delivery roller for continuously delivering the web with holding an unprocessed web and applying tension to the web between the wind-up roller and the delivery roller;

a plurality of follower rollers for converting a traveling direction of the web conveyed at the predetermined speed, tension of which is maintained between the wind-up roller and the delivery roller; and

a meandering correction direction means for allowing the wind-up roller winding up the web with edge alignment,

wherein at least one roller of the plurality of follower rollers is provided with an axis inclination control means for controlling an axis of the roller while limiting deformation of the web between the rollers to Y/E or less, where Y is yield strength of the web and E is Young's modulus of the web.

26. The web conveying apparatus according to claim 25, wherein the meandering correction mechanism comprises a displacement detection signal generator for generating displacement detection signal with laser sensor and an arc motion roller that provides the web an motion opposite to displacement of the web based on the displacement detection signal.

27. The web conveying apparatus according to claim 25, wherein the axis inclination control means is means for controlling the inclination of the axis of the follower roller by moving upward or downward one end of the axis of the follower roller with supporting other end of the axis of the follower roller.

28. The web conveying apparatus according to claim 25, wherein the axis inclination control means comprises an inclination detection means with a non-contact sensor and a servo motion means with a plurality of discrete control amounts.

29. The web conveying apparatus according to claim 25, wherein the axis inclination control means comprises an inclination detection means with a non-contact sensor and a servo motion means with continuous control amount.

30. The web conveying apparatus according to claim 25, wherein the axis inclination control means comprises a servo motion means, and a maximum control amount due to the servo motion means does not exceed yield stress of edges of the web.

31. A continuous oxide-film electrodeposition apparatus for continuously electrodepositing an oxide

film electrochemically on an elongated substrate with applying electric current between the elongated substrate to be immersed in a electrodeposition bath and an anode,

wherein the elongated substrate is conveyed while tension is applied to the elongated substrate and a portion of the substrate is wound on an electrical supply roller that feeds or receives all electrodeposition current via an electrical supply means, and wherein inclinations of the electrical supply roller with respect to preceding and succeeding rollers during conveying are maintained within a predetermined angle that is determined based on a ratio of yield strength to Young's modulus of the elongated substrate.

32. The continuous oxide-film electrodeposition apparatus according to claim 31, wherein the tension applied to the elongated substrate is 0.49N or more for 1 cm of the web width.

33. The continuous oxide-film electrodeposition apparatus according to claim 31, wherein the inclinations of the electrical supply roller with respect to preceding and succeeding rollers during conveying are maintained within 1.025/1000 radian.

34. The continuous oxide-film electrodeposition apparatus according to claim 31, wherein the oxide film is a zinc oxide film deposited in an electrodeposition bath containing at least nitrate ion and zinc ion.

35. The continuous oxide-film electrodeposition apparatus according to claim 31, wherein the elongated substrate is a metal substrate.

36. A continuous oxide-film electrodeposition method for continuously electrodepositing an oxide film electrochemically on an elongated substrate with immersing the elongated substrate to be conveyed and an anode opposing thereto and applying electric current between the elongated substrate and the anode,

wherein the elongated substrate is conveyed while the tension is applied to the elongated substrate and a portion of the substrate is wound on an electrical supply roller that feeds or receives all electrodeposition current via an electrical supply means, and wherein inclinations of the electrical supply roller with respect to preceding and succeeding rollers during conveying are maintained within a predetermined angle that is determined based on a ratio of yield strength to Young's modulus of the elongated substrate.

37. The continuous oxide-film electrodeposition method according to claim 36, wherein the tension applied to the elongated substrate is 0.49N or more for 1 cm of the web width.

38. The continuous oxide-film electrodeposition method according to claim 36, wherein the inclinations of the electrical supply roller with respect to preceding and succeeding rollers during conveying are maintained within 1.025/1000 radian.

39. The continuous oxide-film electrodeposition method according to claim 36, wherein the oxide film is a zinc oxide film deposited in an electrodeposition bath containing at least nitrate ion and zinc ion.

40. The continuous oxide-film electrodeposition method according to claim 36, wherein the elongated substrate is a metal substrate.